

Claims

- | Year | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 | |

3. Nucleic acid molecule according to Claim 1, **characterized in that** the nucleic acid indicated under (c) exhibits at least 80% identity with one of the sequences indicated in (a) or (b), or the complementary sequence thereof.
4. Nucleic acid molecule according to Claim 1, **characterized in that** the nucleic acid indicated under (c) exhibits at least 90% identity with one of the sequences indicated in (a) or (b), or the complementary sequence thereof.
5. Nucleic acid molecule according to Claim 1, **characterized in that** the nucleic acid indicated under (c) exhibits at least 95% identity with one of the sequences indicated in (a) or (b), or the complementary sequence thereof.
6. Nucleic acid molecule according to one of the preceding claims, **characterized in that** it exhibits at least one heat shock element having the sequence NGAANNNNNNNGAAN (SEQ ID NO:2) or the complementary sequence thereof, wherein the nucleotides denoted by N may be A, T, C or G independent of each other.
7. Nucleic acid molecule according to claim 6, **characterized in that** it exhibits at least one heat shock element with the sequence NGAANNBWMNNGAAN (SEQ ID NO:3) or the complementary sequence thereof, wherein B is a G, C or T, W an A or T, and M a C or A.
8. Nucleic acid molecule according to Claim 7, **characterized in that** the heat shock element is selected from TGAAGCCTCTTGAAA (SEQ ID NO:4) and/or TGAATATAAAGGAAA (SEQ ID NO:5) and/or the complementary sequences thereof, wherein two or more heat shock elements, where present, may exhibit the same or different sequences.
9. Nucleic acid molecule according to claims 6, 7 or 8, **characterized in that** it exhibits at least two different heat shock elements.

10. Nucleic acid molecule according to one of the preceding claims, **characterized in that** it contains no STRE element having the sequence CCCCT or AGGGG.
11. Nucleic acid molecule according to Claim 1, **characterized in that** the fragment indicated under (f) comprises the sequence from nucleotide 228 to nucleotide 792 in SEQ ID NO:1.
12. Nucleic acid molecule according to Claim 1, **characterized in that** the fragment indicated under (f) comprises the sequence from nucleotide 492 to nucleotide 792 in SEQ ID NO:1.
13. Nucleic acid molecule according to Claim 1, **characterized in that** the fragment indicated under (f) comprises the sequence from nucleotide 627 to nucleotide 713 in SEQ ID NO:1.
14. Nucleic acid molecule according to one of the preceding claims, **characterized in that** it further comprises at least one nucleic acid sequence for a heterologous gene under the transcriptional control of the heat-inducible promoter .
15. Nucleic acid molecule according to one of Claims 1 to 13, **characterized in that** it further comprises a nucleic acid sequence under the transcriptional control of the heat-inducible promoter which is selected from the following sequences:
- (i) a nucleic acid sequence which encodes a polypeptide with the amino acid sequence of the trehalose-6-phosphate synthase of *Hansenula polymorpha*;
 - (ii) a nucleic acid sequence as indicated in SEQ ID NO:6;
 - (iii) a nucleic acid sequence which exhibits at least 80% identity with the sequence indicated in SEQ ID NO:6;
 - (iv) a nucleic acid sequence which encodes a polypeptide with the amino acid sequence indicated in SEQ ID NO:7 or with a partial sequence thereof, wherein the polypeptide exhibits trehalose-6-phosphate synthase activity;

- (v) a nucleic acid sequence which in consideration of the degeneration of the genetic code would encode a polypeptide with the amino acid sequence indicated in SEQ ID NO:7 or with a partial sequence thereof, wherein the polypeptide exhibits trehalose-6-phosphate synthase activity;
- (vi) a nucleic acid sequence which encodes a polypeptide the amino acid sequence of which exhibits at least 80% identity with the amino acid sequence indicated in SEQ ID NO:7.
16. Nucleic acid molecule according to Claim 15, **characterized in that** the nucleic acid sequence indicated under (iii) exhibits at least 90% identity with the sequence indicated in SEQ ID NO:6.
17. Nucleic acid molecule according to Claim 15, **characterized in that** the nucleic acid sequence indicated under (vi) encodes a polypeptide the amino acid sequence of which exhibits at least 90% identity with the amino acid sequence indicated in SEQ ID NO:7.
18. Host cell containing a nucleic acid molecule according to one of Claims 1 to 17, wherein the host cell is a prokaryotic or eukaryotic cell.
19. Host cell according to Claim 18, **characterized in that** the eukaryotic cell is a fungal cell.
20. Host cell according to Claim 19, **characterized in that** the fungal cell is a yeast cell.
21. Host cell according to Claim 20, **characterized in that** the yeast cell is *Hansenula polymorpha*.
22. Expression vector comprising at least one nucleic acid molecule according to one of Claims 1 to 13.

23. Expression vector comprising at least one nucleic acid molecule according to one of Claims 14 to 17.
24. Kit, comprising:
- (a) an expression vector according to Claim 22, which is suitable for having cloned into it a nucleic acid which encodes a recombinant protein, and
 - (b) a host cell suitable for induction of the heat-inducible promoter and for production of the recombinant protein.
25. Kit, comprising:
- (a) an expression vector according to Claim 23 and
 - (b) a host cell which is suitable for induction of the heat-inducible promoter and for production of a protein encoded by a coding sequence under the transcriptional control of the heat-inducible promoter.
26. Use of a nucleic acid molecule according to one of Claims 1 to 17 or of a host cell according to one of Claims 18 to 21 or of an expression vector according to Claims 22 or 23 or of a kit according to Claim 24 or 25 for expression of a gene under the control of the heat-inducible promoter.
27. Use of a nucleic acid molecule according to one of Claims 1 to 17 or of a host cell according to one of Claims 18 to 21 or of an expression vector according to Claims 22 or 23 or of a kit according to Claim 24 or 25 for the production of one or more proteins.
28. Method for the production of one or more proteins, comprising
- (i) Cloning of at least one nucleic acid which encodes a recombinant protein into an expression vector according to Claim 22, such that the nucleic acid thus cloned is under the transcriptional control of the heat-inducible promoter;

- (ii) introduction of the expression vector obtained in (i) into a host cell suitable for induction of the heat-inducible promoter and for production of the recombinant protein;
- (iii) cultivation of the host cell obtained in (ii);
- (iv) induction of the heat-inducible promoter by methods known per se.

29. Method for the production of one or more proteins, comprising

- (i) introduction of an expression vector according to Claim 23 into a host cell suitable for induction of the heat-inducible promoter and for production of the recombinant protein;
- (ii) cultivation of the host cell obtained in (i);
- (iii) induction of the heat-inducible promoter by methods known per se.

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